

PATENT CLAIMS

1. Bilateral drive for rotating a drive wheel connected to an adjusting device into one or other drive direction with a drive lever which is capable of swivelling about a drive axis starting from a neutral position into one or other direction and which is connected to a coupling element for expanding a spring element which is supported at least in part on the cylindrical drive face of the drive wheel and entrains the drive wheel in the circumferential direction when the drive lever is moved away from the neutral position whilst with a return of the drive lever into the neutral position the contact bearing of the spring element against the cylindrical drive face of the drive wheel is lifted and the drive wheel is not entrained,

characterised in that

the drive lever (2) is connected directly or indirectly through a coupling element (42) to expansion cams (31-34) which are able to tilt about an axis spaced from the drive axis (10) and expand actuation levers (51-54, 71) connected to the spring element (6, 70) so that the spring element (6, 70) bearing against the cylindrical drive face of the drive wheel (1) is widened out.

2. Bilateral drive according to claim 1, **characterised in that** the expansion cams (31-34) are mounted at different radial distances from the drive axis (10).
3. Bilateral drive according to claim 2, **characterised in that** at least one expansion cam (31-34) is pretensioned and mounted radially displaceable between expansion faces (72, 73; 515, 525) of the actuation levers (51-54, 71).

4. Bilateral drive according to claim 3, **characterised in that** the pretensioned and radially displaceable expansion cam (33) is designed wedge-shaped, is mounted between two contra wedge faces (72,73; 533, 543) of the expansion faces of the actuation levers (51-54, 71) and is supported self-locking opposite the other expansion cam (34).
5. Bilateral drive according to claim 4, **characterised in that** the other expansion cam (34) is designed wedge-shaped with oppositely aligned wedge shape and is tensioned between contra wedge faces (534, 544) of the actuation levers (53, 54).
6. Bilateral drive according to claim 5, **characterised in that** the contact faces of the wedge-shaped expansion cams (33, 34) and the wedge faces (72;73; 533, 543; 534, 544) of the actuation levers (53, 54, 71) have a lower coefficient of friction than the reciprocal support (35, 36) of the wedge-shaped expansion cams (33,34).
7. Bilateral drive according to claim 5 or 6, **characterised in that** the reciprocal support (35, 36) of the wedge-shaped expansion cams (33, 34) is formed wedge-shaped with a smaller wedge angle ($\alpha/2$) compared to the wedge angle (α) included between the contact faces of the wedge-shaped expansion cams (33, 34) and the wedge faces (72, 73; 533,543; 534, 544) of the actuation levers (53, 54, 71).
8. Bilateral drive according to at least one of the preceding claims, **characterised in that** the spring element consists of a spring strip (6) whose ends (61,62) are angled parallel to each other and are inserted into sockets (511, 521; 531, 541; 781, 782) of the actuation levers (51-54, 71).

9. Bilateral drive according to claim 8, **characterised in that** the spring strip (6) is pretensioned.
10. Bilateral drive according to claim 8 or 9, **characterised in that** the actuation levers (51, 52) are designed disc-shaped and have a peripheral surface which is adapted at least in part to the cylindrical drive face of the drive wheel (1).
11. Bilateral drive according to claim 8 or 9, **characterised in that** the actuation levers consist of a one-piece spring-elastic expansion lever (71) which includes the expansion cams (31-34) and drive axis (10) and has on the side opposite the expansion cams (31-34) in relation to the drive axis (10) an elastic web (76) which takes up the tensile forces.
12. Bilateral drive according to claim 11, **characterised by** a shaped part (7) containing the expansion lever (71) and a circumferential face (70) adapted to the drive face of the drive wheel (1).
13. Bilateral drive according to claim 12, **characterised in that** the shaped part (7) consists of a stamped steel part, a plastics part or a sintered part and can be inserted without pretension into the interior space of the drive wheel (1).
14. Bilateral drive according to one of the preceding claims 8 to 11, **characterised in that** between the actuation levers (51-54) or the expansion lever (71) are resetting springs (81, 82; 84, 85) arranged so that the actuation levers (51-54) or the expansion lever (71) move the expansion cams (31-34) after swivel movement of the drive lever (2) back into an initial position corresponding to the neutral position of the drive lever (2).

15. Bilateral drive according to at least one of the preceding claims, **characterised in that** between the drive lever (2) and a locally fixed stop on the housing of the bilateral drive is a lever-resetting spring (86) arranged to move the drive lever (2) after swivel movement back into the neutral position.
16. Bilateral drive according to at least one of the preceding claims claim 1, **characterised in that** the expansion cams (31, 32) are arranged at different radial distances from the drive axis (10) on a reinforcement lever (41, 42) supported for swivel movement on the drive lever (2).
17. Bilateral drive according to claim 16, **characterised in that** the attachment (91, 92) of the reinforcement lever (41, 42) on the drive lever (2) is arranged radially aligned with the expansion cams (31, 32).
18. Bilateral drive according to claim 17, **characterised in that** the attachment (91, 92) of the reinforcement lever (41, 42) to the drive lever (2) is provided on the same side in relation to the drive axis (10) as the expansion cams (31,32).
19. Bilateral drive according to claim 18, **characterised in that** the attachment (91, 92) of the reinforcement lever (41, 42) on the drive lever (2) is mounted on the side of the reinforcement lever (42) opposite the one expansion cam (31) in relation to the drive axis (10).
20. Bilateral drive according to at least one of the preceding claims, **characterised in that** the drive lever (2) is attached to the drive axis (10) by an oblong hole (20).

21. Bilateral drive according to at least one of the preceding claims 1 to 19, **characterised in that** the drive lever (2) is attached to the drive axis (10) through a bore (21) adapted to the diameter of the drive axis (10).
22. Bilateral drive according to at least one of the preceding claims, **characterised in that** the drive lever (2) is mounted substantially without play on the drive axis (10) and that the reinforcement lever (42) is mounted on the drive axis (10) through an oblong hole (420).